

(c) an AV conference manager for managing a videoconference during which the video image and spoken audio of one of the participants can be reproduced at the workstation of another of the participants; and

(d) one AV reproduction device with associated capabilities of reproducing at least audio or video signals at a workstation and for addressing a request for reproduction services generated at a workstation, wherein the AV conference manager includes a directory of each AV reproduction device and its associated capabilities, and wherein a request for a reproduction service, generated at a workstation, is processed by the AV conference manager to cause an appropriate AV reproduction device to provide the requested reproduction service to the workstation.

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3. The teleconferencing system of claim 2 wherein, if the workstations of a first and second of the participants have AV capture and reproduction capabilities for capturing and reproducing video images and spoken audio of the participants, and the workstation of a third of the participants does not have the AV capture and reproduction capabilities, the teleconference includes a data conference among the first, second and third participants managed by the data conference manager and a videoconference between the first and second participants managed by the AV conference manager.

4. The teleconferencing system of claim 2 wherein, if the workstations of a first and second of the participants have AV capture and reproduction capabilities for capturing and reproducing

video images and spoken audio of the participants, and the workstation of a third of the participants has audio, but not video, capture and reproduction capabilities, the teleconference includes a data conference among the first, second and third participants managed by the data conference manager and a videoconference among the first, second and third participants managed by the AV conference manager, wherein each of the first and second participants can reproduce the image and spoken audio of the other as well as the spoken audio of the third participant, and the third participant can reproduce only the spoken audio of the first and second participants.

5. The teleconferencing system of claim 2 wherein, if the workstations of a first and second of the participants have AV capture and reproduction capabilities for capturing and reproducing video images and spoken audio of the participants, and a third of the participants participates in the teleconference by telephone, the teleconference includes a data conference among the first and second participants managed by the data conference manager and a videoconference among the first, second and third participants, wherein each of the first and second participants can reproduce the image and spoken audio of the other as well as the spoken audio of the third participant, and the third participant can reproduce only the spoken audio of the first and second participants.

6. The teleconferencing system of claim 2 further comprising:

(a) a participant locator which associates a participant with an identifier entered when the participant logs into any one of a plurality of workstations, whereby a subsequent call to initiate a videoconference with the first participant is routed to the workstation at which the participant is logged in.

7. The teleconferencing system of claim 6 further comprising:

(a) a services directory for tracking the audio and video capabilities associated with each workstation, whereby a call, from a second to a first participant, and including a request for a service with respect to the first participant, is processed based on which capabilities associated with the first participant.

8. The teleconferencing system of claim 6 wherein the data conference and AV conference managers manage a teleconference among a plurality of participants such that, if at least one capability of the set of capabilities consisting of audio capture, audio reproduction, video capture, video reproduction, and the capability of connecting to the first network, is not available to at least one of the participants, each of the plurality of participants can participate in the teleconference to the extent of the capabilities available to the participant.

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~~10.~~ The teleconferencing system of claim 6 further comprising:

(a) signal format conversion means for converting signals of one format to another format, whereby the teleconferencing system can support capture and reproduction devices based on different signal format standards.

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~~11.~~ The teleconferencing system of claim 2 wherein the AV path connects the workstation of a first participant at a first location to the workstation of a second of the participants at a second location via a third location, and further comprising:

(a) an AV signal switcher at the third location, coupled to the AV path, for receiving and routing the AV signals to a location other than the third location if the AV signals are intended to be processed at the other location.

<sup>11</sup>  
~~12.~~ The teleconferencing system of claim ~~11~~<sup>10</sup>, further comprising:

(a) at least a first and a second codec, in communication with the AV path and being respectively located at the first and second locations, for compressing the AV signals and decompressing compressed AV signals, whereby captured video image and spoken audio of the first participant can be compressed by the first codec at the first location, routed from the first location to the second location via the AV signal switcher without being decompressed at the third location and decompressed by the second codec at the second location for reproduction at the workstation of the second participant.

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12. The teleconferencing system of claim 11, whereby the video image and spoken audio of the first participant routed to the second location, via the third location, can be reproduced at the workstations of both the first and second participants.

13. The teleconferencing system of claim 13, further comprising a video mosaic generator, in communication with the AV path, for combining the captured images of a first and second participant into a mosaic image for reproduction at at least one workstation.

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14. The teleconferencing system of claim 14, further comprising means, in communication with the AV path, for combining a portion of the mosaic image with a captured image of a third participant to generate a composite mosaic image for production at at least one workstation.

15. The teleconferencing system of claim 15, further comprising an audio summer, in communication with the AV path, for receiving the captured audio of a first, second and third participant and combining the received audio of the second and third participants into an audio sum for reproduction at the workstation of the first participant.

16. The teleconferencing system of claim 16, further comprising means, in communication with the AV path, for combining a portion of the audio sum with the captured audio of another of the participants to generate a composite audio sum for reproduction at the workstation of at least one of the participants.

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*18.* The teleconferencing system of claim ~~13~~<sup>12</sup> further comprising:

(a) at least one signal router for routing at least the AV signals among participant's workstations in such a way so as to optimize the carrying of AV signals between the workstations.

*18*  
*19.* A teleconferencing system of claim ~~18~~<sup>17</sup> wherein the router optimizes the signal routing based on either the actual or anticipated state of the AV path.

*19*  
*20.* The teleconferencing system of claim ~~11~~<sup>10</sup> further comprising:

(a) a first, second and third codec in communication with aid AV path and being respectively located at the first, second and third locations, for compressing the AV signals and decompressing the compressed AV signals; and

(b) an AV signal switcher in communication with the third codec, for receiving and routing the AV signals to a second location if the AV signals are intended to be processed at the second location such that images of the first participant compressed by the first codec and routed to the second location via the third location are not decompressed by the third codec.

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*21.* The teleconferencing system of claim 2 further comprising:

(a) a video mosaic generator, in communication with the AV path, for combining the captured images of a first and second participant into a mosaic image; and

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*21*  
*22.* (b) a distributed mosaic generator, in communication with the AV path, for combining a portion of the mosaic image with a captured image of a third participant to generate a composite mosaic image of the captured images of the first, second and third participants.

*21*  
*22.* The teleconferencing system of claim *21* further comprising:  
*20*  
*23.* (a) a video mosaic generator, coupled to the AV path, for combining the captured images of a first and second of the participants into a mosaic image of the captured images, whereby the mosaic image can be reproduced at the workstations of the first and second participants; and  
*24.* (b) a close-up selector for selecting the image one participant whose image is reproduced in the mosaic image and replacing the mosaic image with the selected image.

*22*  
*23.* The teleconferencing system of claim 2, further comprising:  
*20*  
*24.* (a) a video mosaic generator, coupled to the AV path, for combining the captured images of a first and second of the participants into a mosaic image of the captured images; and  
*25.* (b) an audio summer, coupled to the AV path, for combining the captured audio of a plurality of participants into an audio sum including the captured audio of each of the participants except for a first of the participants, whereby the audio sum can be reproduced at the workstation of the first participant.

*23*  
*24.* A method of for conducting a teleconference among a plurality of participants having workstations with associated monitors for displaying visual images, and with associated AV

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capture and reproduction capabilities for capturing and reproducing video images and spoken audio of the participants, the workstations being interconnected by a first network, the network providing a data path for carrying digital data signals among the workstations, the method comprising the steps of:

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- (a) managing a data conference during which data is shared among a plurality of the participants and displayed on the monitors of their respective workstations;
- (b) moving AV signals representing video images and spoken audio of the participants among said workstations;
- (c) managing a videoconference during which the video image and spoken audio of one of the participants is reproduced at the workstation of another of the participants;
- (d) providing at least one AV reproduction device with associated capabilities of reproducing at least audio or video signals at a workstation;
- (e) defining at least one directory of AV reproduction devices and each device's associated capabilities; and
- (f) processing a request for a reproduction service to cause an appropriate AV reproduction device to provide the requested reproduction service to the workstation.

*24*                    *23*  
25. The method of claim *24* further comprising the steps of:

- (a) tracking the audio and video capabilities associated with each workstation; and
- (b) processing a call, from a second to a first participant, by including a request for a service with respect to the first participant, based on the capabilities associated with the first participant.

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26. The method of claim 24 further comprising the step of:

(a) managing a teleconference among a plurality of participants such that, if at least one capability of the set of capabilities consisting of audio capture, audio reproduction, video capture, video reproduction, and the capability of connecting to the first network, is not available to at least one of the participants, each of the plurality of participants can participate in the teleconference to the extent of the capabilities available to the participant.

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27. The method of claim 24 further comprising the step of:

(a) converting signals of one format to another format to enable the teleconferencing system to support capture and reproduction devices based on different signal format standards.

## REMARKS

This application is a 35 U.S.C § 121 divisional application of parent United States patent application 08/131,523, filed October 1, 1993. Claims 2 to 10 as amended correspond in part to the claims Group III defined in a Restriction/Election requirement in the parent application.